TRIAL EXHIBIT 31

Google | Android 101

An introduction to Android and Android partnerships

Last updated: December 2008

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA

TRIAL EXHIBIT 31

CASE NO. 10-03561 WHA

DATE ENTERED_____

BY_____
DEPUTY CLERK

Google Confidential and Proprietary

Google
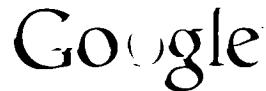
Contents

 android

- ## Introduction
  - Mobile Market and Android Opportunity
  - Why Android, What is Android, Android Value Proposition
  - Android Market Overview

- ## Partner Overview
  - Open Handset Alliance Overview
  - Android Partner Types
  - Android Partnership models

- ## Extra Slides
  - T-Mobile G1 Launch and Stats
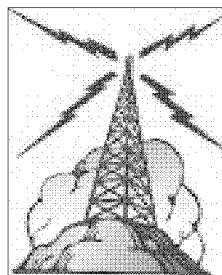
Mobile Market Opportunity

… it's big and it's growing

Google Confidential and Proprietary   3

Google   Why Mobile?   ANDROID

By the end of 2008 there is roughly **~4 billion mobile phone users** worldwide. Almost 1 billion mobile handsets were sold in each of 2006 and 2007. **That is 63% mobile penetration**.

*To put this in context, worldwide there are*:

- 800M Automobiles
- 850M Personal Computers
- 1.3B Landline Telephones
- 1.5B Televisions
- 1.4B Credit Cards
- 1.4B Internet users

Units in Billions

"The biggest growth areas are clearly going to be in the mobile space. Mobile, mobile, mobile." – *Eric Schmidt, NY Times, 4/20/2007*

Google Confidential and Proprietary
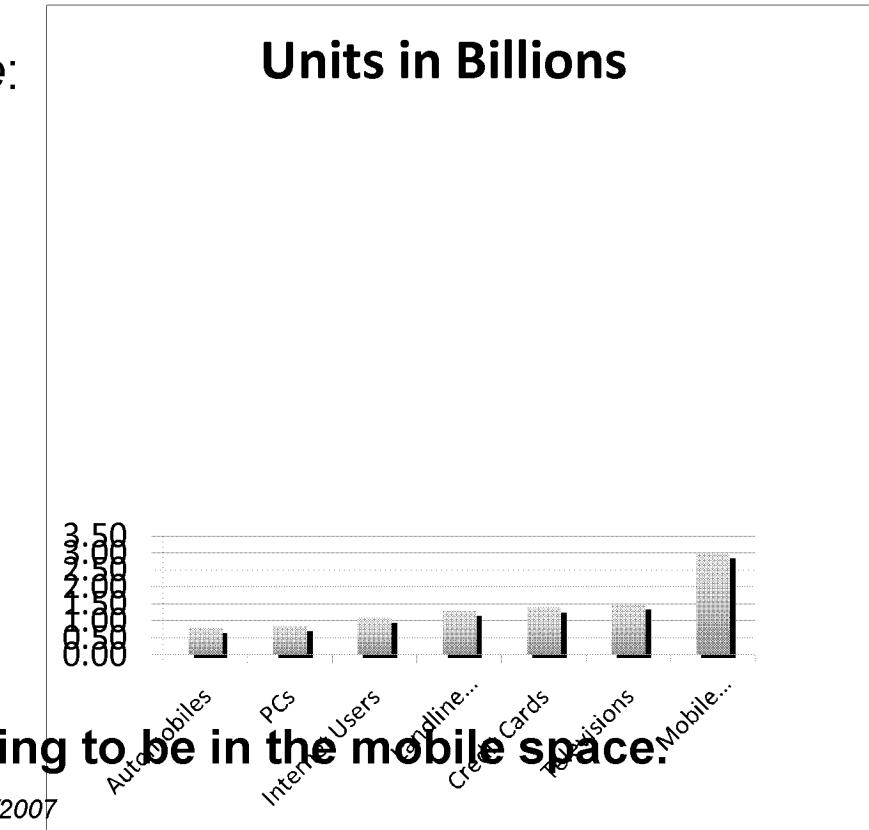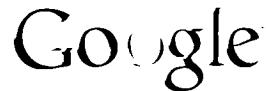
Google   **Why Android?**   ANDROID

- ## Does the world really need another phone stack?

  - ### Android strategic value proposition

- ## Why did Google invest in Android?

  - ### … and then give it away?

- ## What does Android mean for Partnerships?

  - ### Who do we partner with and how?
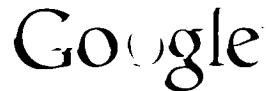
Google **Does the world need another phone stack?** ANDROID

- ## The mobile world of tomorrow:

  - Today's phones are as powerful as yesterday's computers

  - Many people will never have a PC – only a mobile phone

- ## Held back by the mobile world of today:

  - Continued promise of a mobile Internet not yet delivered

  - Mobile ecosystem is broken

    - Access to users is tightly controlled

    - Broken relationship between OEMs and operators

    - Need for more software expertise

    - Limited power and freedom for developers

    - Locked down devices and network access
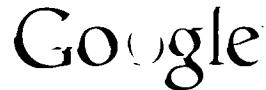
Google — The model is changing… — ANDROID

- A few years ago, mobile platforms were driven by OEM and carrier requirements

- Enter: **Microsoft**, **Apple**, **Blackberry**… and **Nokia** (s/w)

- Major shift to people who understand software, customer experience, application development

- **But the ecosystem is still broken and not open!**

  - Access to users still controlled

  - Other handset OEMs (50% of market) don't have a solution

  - Service providers still at the mercy of those who control the access points

Google Confidential and Proprietary

Why Google?

Why does Google care?

Google Confidential and Proprietary   8

Google **Mobile and Desktop query patterns converging** ᗺᗡᘓᑯᗡᑎ∀

Query patterns on high-end mobile devices closely mimic computer-based search patterns. This implies that as mobile devices and networks become more advanced, the trajectory for mobile search will converge with conventional computer based search...

-- Google Research

Trial Exhibit 31, Page 9 of 47

Google

Desktop vs. iPhone Traffic

ANDROID
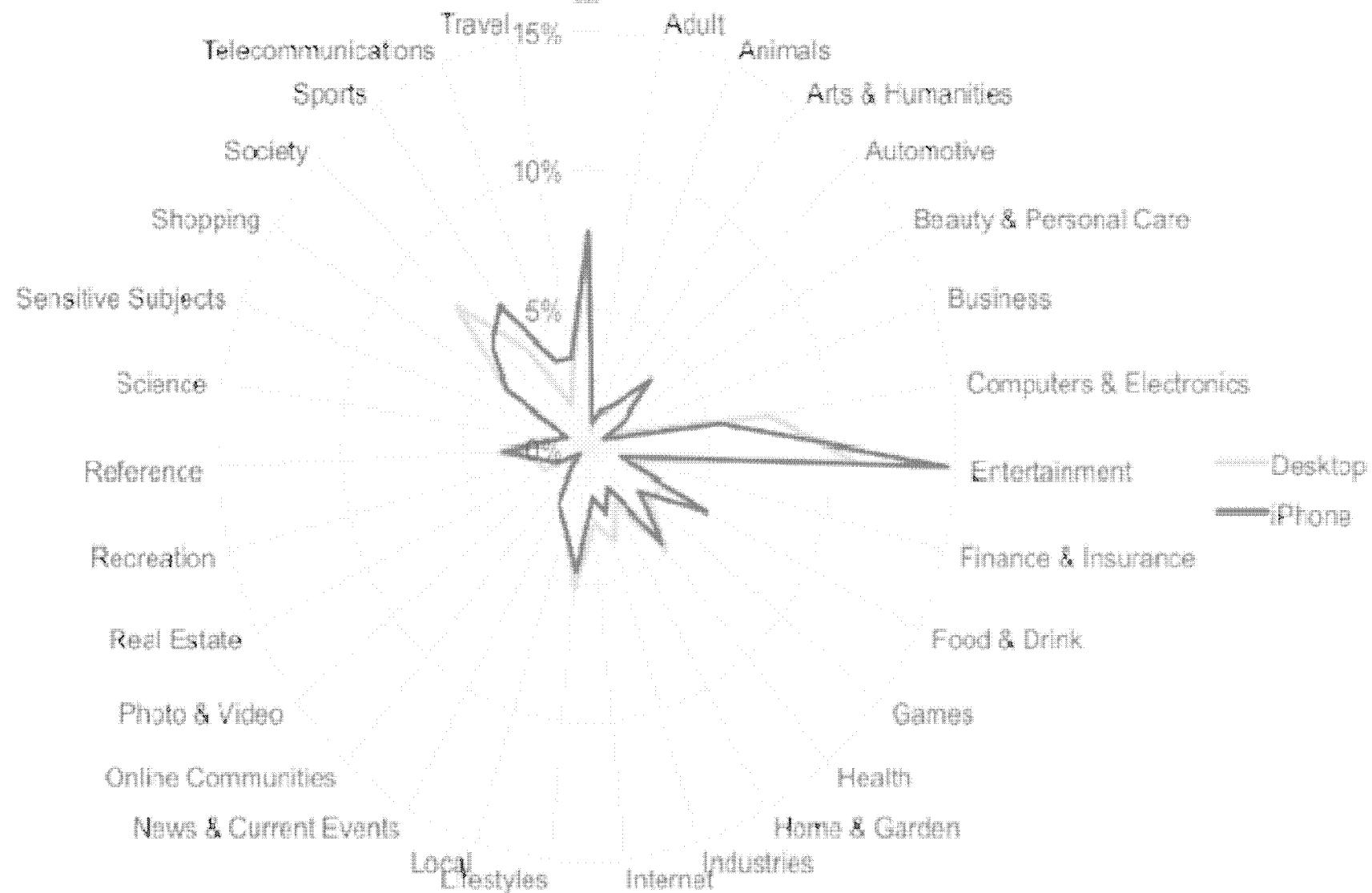
Google Confidential and Proprietary   10

Google   **Google search traffic by platform**   **ᗡIOᴚPИᗄ**

North America

BlackBerry
32%

Sony
Ericsson
4%

WinMo
17%

S60
3%

iPhone
44%

United Kingdom

BlackBerry
7%

Sony
Ericsson
29%

WinMo
6%

S60
23%

iPhone
35%
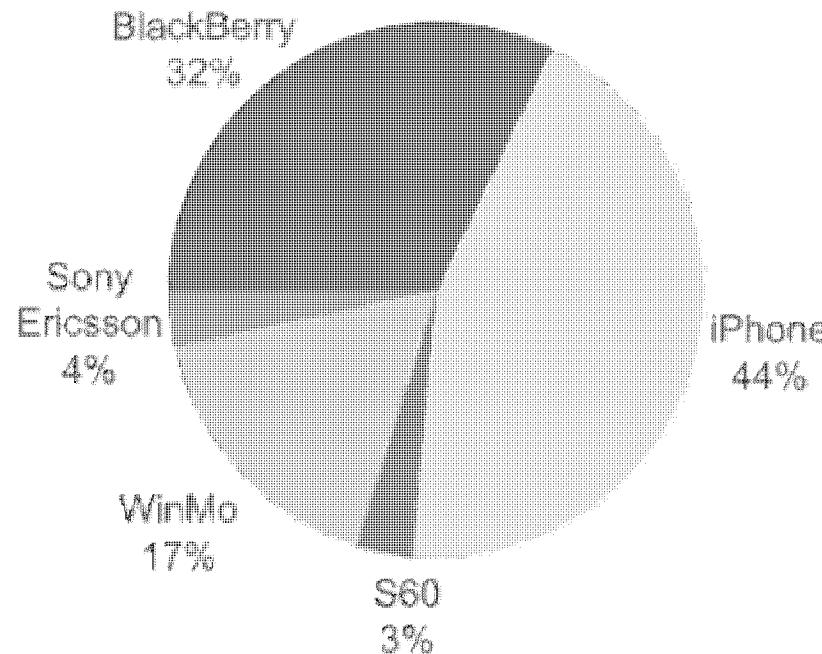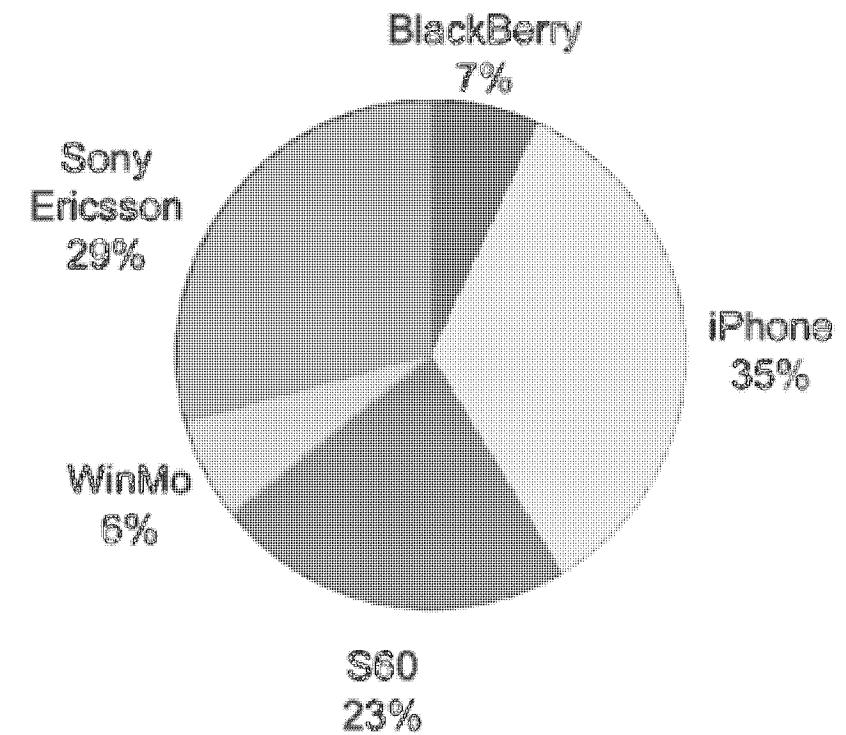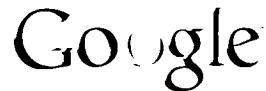
Google   **Why did Google invest in Android?**   android

- ## Help deliver on the promise of open mobile Internet access

  - ### Better browser, location, etc. technology

  - ### Leverage point for cheaper, flat rate data plans

- ## Drive innovation in the mobile industry

  - ### Build a large platform and application developer communities

  - ### Drive investment in mobile software

- ## Don't get locked out!

  - ### Major mobile platform players are pushing into the software services space

  - ### Platform consolidation moving to the major players

  - ### Google can only be successful when there is true openness and competition

Oracle America v. Google, 3:10-cv-03561-WHA

Google Confidential and Proprietary   12

GOOGLE-00298449

Trial Exhibit 31, Page 12 of 47
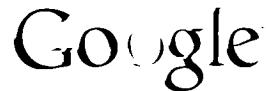
Google   ...and then give it away?   ANDROID

- Android is no way tied to Google services
  - You could use it to build a Yahoo or Baidu phone*

- We've open sourced the entire platform
  - Hosted at kernel.org, not Google servers
  - Will grow the core technical team to include many other entities

- People don't need a partnership with Google to launch Android-powered devices

* I leave out Microsoft because they would *probably* use Windows Mobile.

Google Confidential and Proprietary   13

Google   **Android is not a Google product... why?!**   ᗡIOᴙbᴖɒ

- ## For Android to be successful, it needs to:

  - Be truly open and free of any single party control

  - Enable and encourage customization, commercialization and differentiation

  - Innovate faster than any other mobile platform

- ## Google only has 100 engineers on Android, and we need a much larger team to make the platform successful

  - Be full featured

    – Google doesn't have all the expertise on mobile embedded software (CDMA, SIM Toolkit, power management, etc.)

  - Be widely supported

    – We need the highly-fragmented mobile industry adopt Android
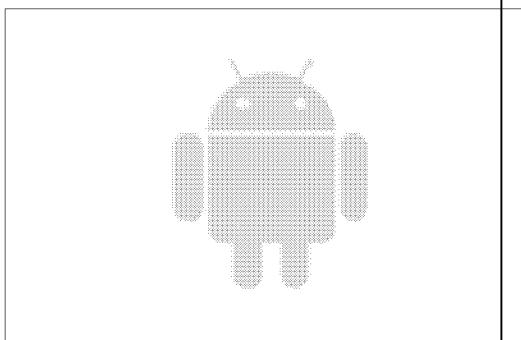
What is Android?

Is it a Gphone? Is it a phone?

Google

What is Android?

android

A complete, modern, **open source mobile platform**

A **series of phones** powered by that platform

A **go-to market strategy** to promote openness

Google Confidential and Proprietary   16

Trial Exhibit 31, Page 16 of 47
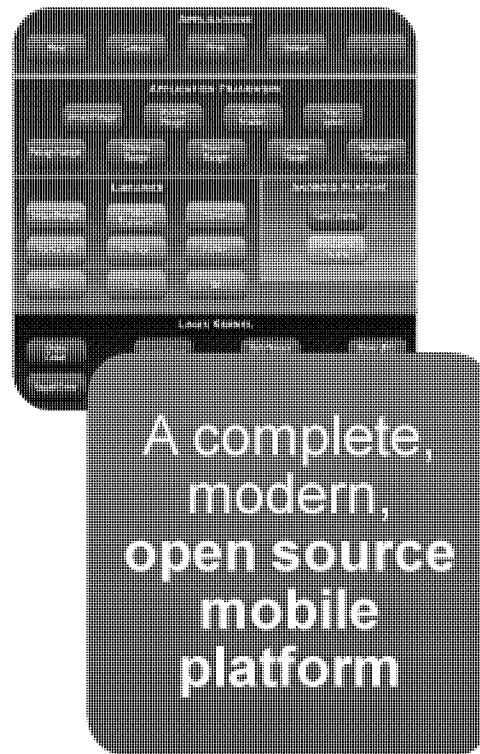
Google   **Android Value Proposition**   ᴀɴᴅʀᴏɪᴅ
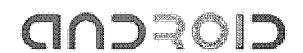
- ## Powerful

  - Full WebKit browser with support for AJAX and Gears

  - Rich 3D, multi-media, location-based services

  - Robust security model

- ## Open

  - Available under the Apache2 license

  - No license to Google, no restrictions on UI

  - Open architecture and extremely customizable UI

- ## Ecosystem

  - Software Development Kit

 - Android Developer Challenge

  - Android Market

Trial Exhibit 31, Page 17 of 47

Google

Android Value Proposition

ANDROID

Application Developers
- Simple, yet powerful application development framework and Software Development Kit
- Open access to APIs to build richer applications
- Simplified application distribution model

End Users
- Better, more powerful software that takes full advantage of the device capabilities
- Full Internet browser with desktop-like browsing experience
- Open access to the Internet and applications

Mobile Handset Manufacturers
- Complete, open and free mobile phone stack
- Reduced software costs (both acquisition and R&D)
- Extensive support for customization

Mobile Network Operators
- Powerful software platform to promote data usage and premium services
- Extensive support for add-on services and customization
- Simplified content distribution and revenue-share model

Google Confidential and Proprietary   18
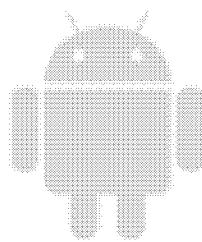
Android Platform Overview

A technical overview of the Android platform

**Google** **Android Project Goals** ⊓∩⊃ROI⊃

1 Enable a great mobile phone experience

2 Provide an open and extensible application architecture

**3** Provide a highly portable and scalable mobile platform

4 Provide a comprehensive open source solution
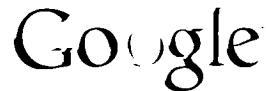
Google · **Goal 1: Great Phone Experience** · **ANDROID**

- Powerful features
  - Platform must support an integrated user experience
  - Support for rich graphics, media, network and location services

- Responsive user interface
  - Phone application must always be responsive
  - Wayward applications can't crash phone

- Seamless multi-tasking
  - Can switch in and out of applications while in a call
 - Applications don't lose state

Google Confidential and Proprietary   21

Trial Exhibit 31, Page 21 of 47
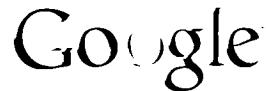
Google   Goal 2: Open Architecture   ⊡∩Ɔ2OID

- ## Powerful, simple application framework with Java language APIs

  – No need for developers to learn a new language or work with low-level programming details

  – Enabling reuse and replacement of components

- ## Scalable user experience

  – 12 key, QWERTY, touch screen, combinations

  – Portrait, landscape, pivoting, etc

  – Software multimedia implementation with hardware support

Open Architecture

"Pick photo"

New components can use existing functionality

Trial Exhibit 31, Page 23 of 47

Google
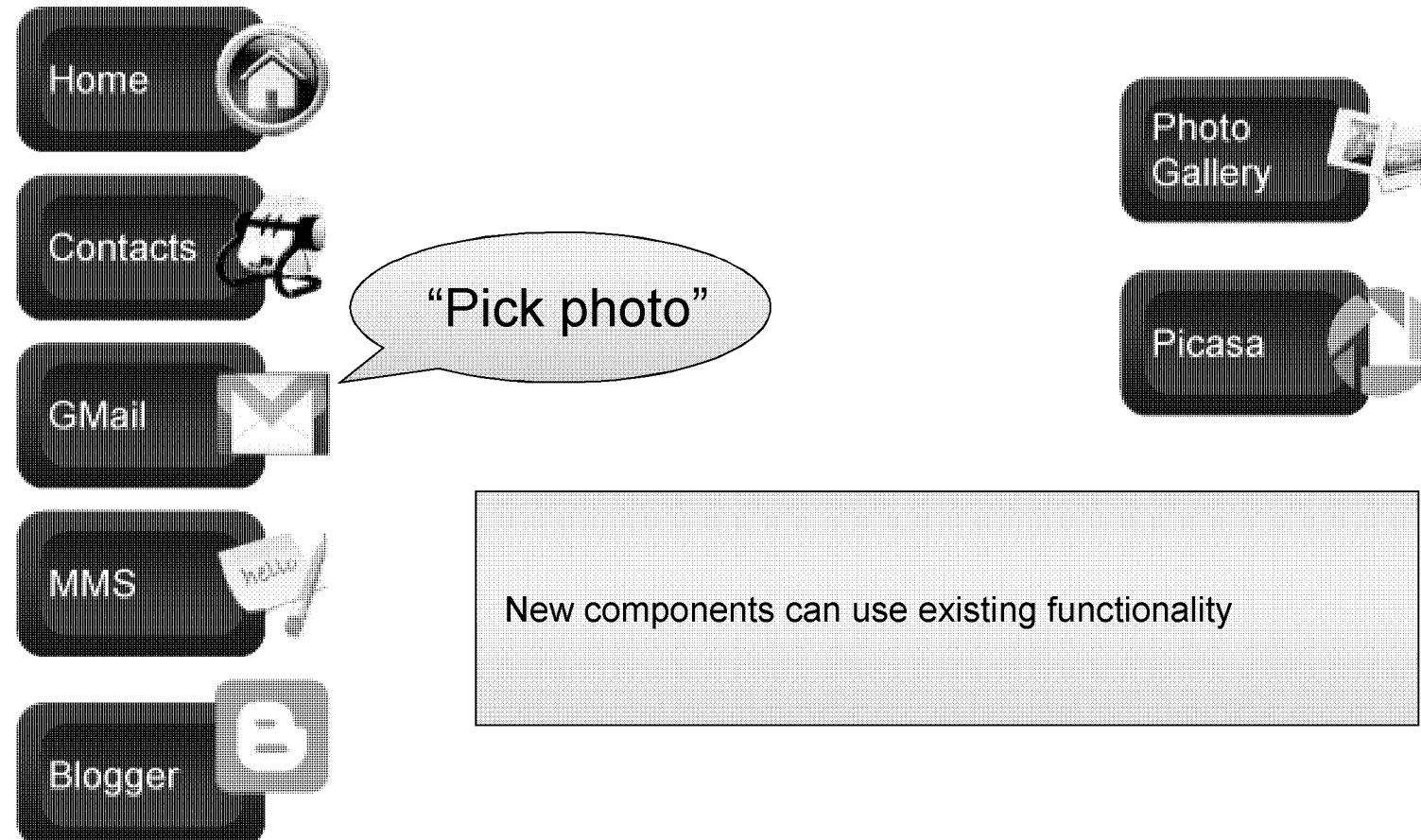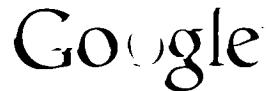
Goal 3: Portable Platform

ANDROID

- Portable to almost any device which can run Linux

- Dalvik VM provides consistent runtime for applications across hardware platforms

- Robust abstraction layer for hardware

Google Confidential and Proprietary   24

Google

# Goal 4: Open Source Platform
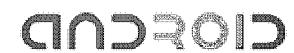
ANDROID

Android is a fully featured, open, free and customizable mobile phone platform that will be made available as open source software*. It includes:

• Operating System (Android Linux Kernel Enhancements)

• Middleware (Android Libraries and Application Framework)

• Runtime (Dalvik Virtual Machine)

• Core applications

• Software Development Kit

All available as free open source software.

*All Linux kernel enhancements will be distributed under GNU General Public License (GPL) v2 and, with few exceptions, all remaining source will be distributed under Apache Software License (ASL) 2.0.

Trial Exhibit 31, Page 25 of 47

Android Platform
Android Architecture
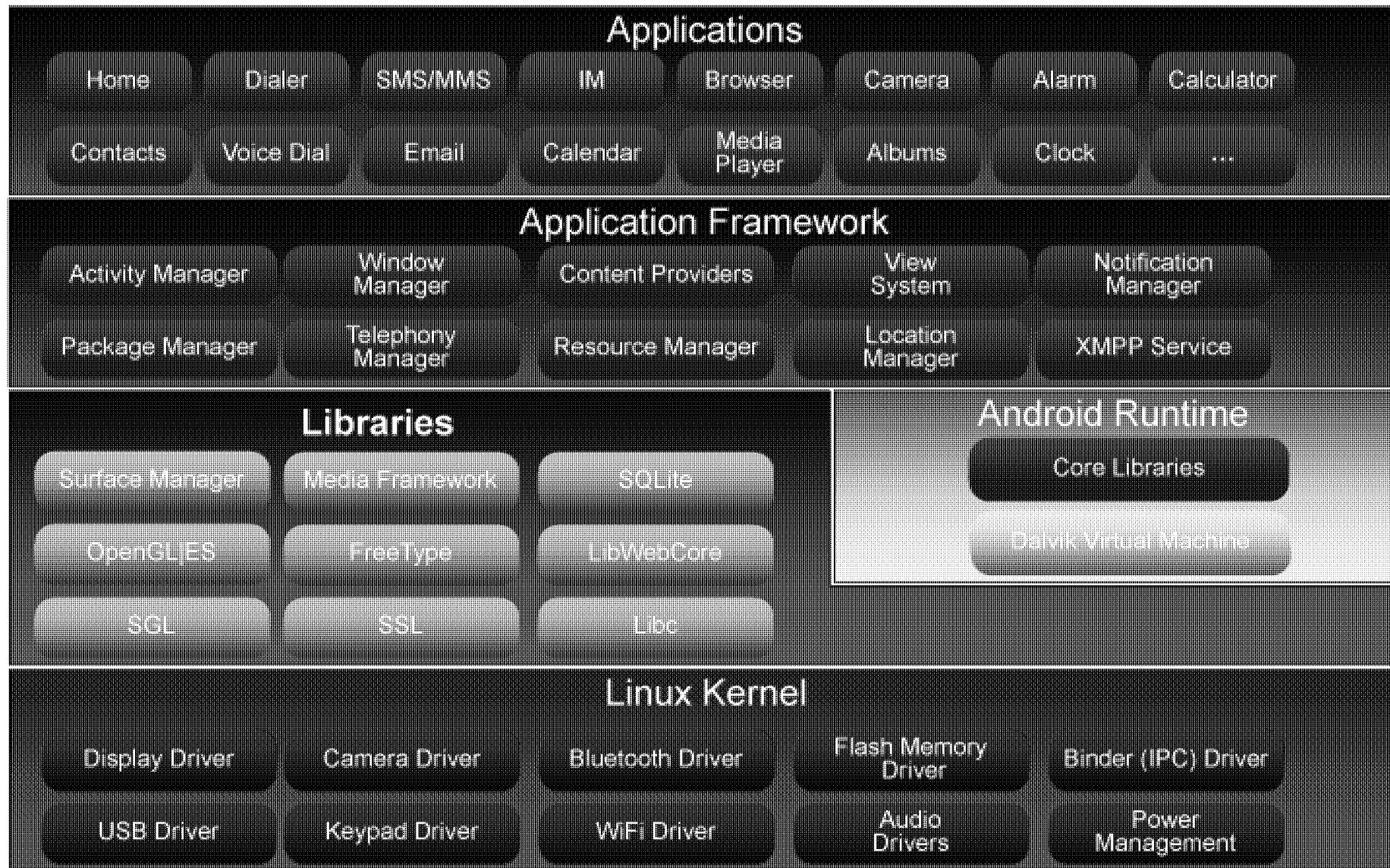
Google

android

Google Confidential and Proprietary   26
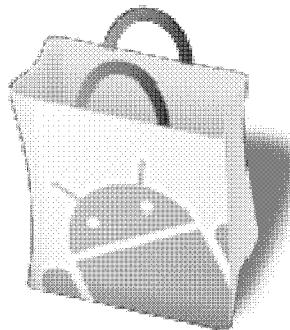
Android Market

Solving the mobile software distribution problem

Google Confidential and Proprietary

Google

Vision

ANDROID
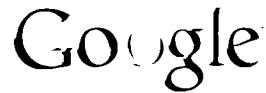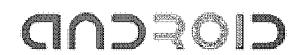
Create a global applications market that simplifies content distribution and maximizes value to content providers and operators

Google Confidential and Proprietary   28

Google
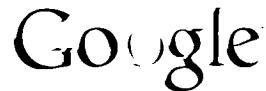
Market Value Proposition

ANDROID

Developers
- A single, unified place to access users, with a global distribution
- Open to everyone
- Simple, easy, revenue share model

End Users
- A single, unified place to get all the best content
- Consumer ratings drive content ranking

Mobile Handset Manufacturers
- Provide access to content worldwide to all Android devices

Mobile Network Operators
- Provide the best and most complete source of content to users, without the need for direct deals with each developer
- Drive data plan subscriptions with access to great content

Google Confidential and Proprietary   29

Google

Product Overview

ꓮꓠꓓꓤꓳꓲꓓ

- ## Open Market

  - Application developers can register on-line and choose to provide their applications for free or for a fee

  - No certification process for applications (all must be digitally signed by provider)

  - Self reinforcing content filtering model. Users rate and flag content (similar to YouTube)

- ## Integrated Billing

  - Google Checkout provides billing back-end for 1.0

  - Support for refunds and chargebacks

- ## Scale

  - Single marketplace drives volume and open access to applications

  - Reduces application distribution costs for content provider and operator

Google Mobile Services (GMS)

Google Mobile Services (GMS) is a collection of applications and services built by Google on top of the Android Application Framework to enable Google-specific features on the platform. This will include the following applications (among others):
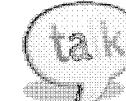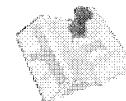
Gmail   Google Talk   Maps
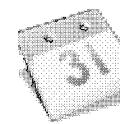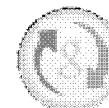
Calendar (Sync)   Contact Sync   YouTube

Google Mobile Services will not be provided as open source software, but will be available in binary form as part of a distribution agreement with Google.

More Google Mobile Services may be added in future.

Google Confidential and Proprietary

Android Partnerships Overview

An introduction to Android strategic partnerships

Google   What is the Open Handset Alliance?

ANDROID

The Open Handset Alliance™ is a group of more than **30 technology and mobile companies** who have come together to **accelerate innovation in mobile and offer consumers a richer, less expensive, and better mobile experience**.

- Five categories of alliance members:
  - Semiconductor Companies
  - Handset Manufacturers
  - Operators
  - Software Vendors
  - Commercialization Partners

- Each member **contributes** something to the platform or ecosystem.

- Note: Open Handset Alliance members are not necessarily Google *partners*

# Google **Android is all about Partnerships** ⊓ИDROID

Google will form strategic partnerships with Mobile Network Operators (MNOs) and Handset Manufacturers (OEMs) to build and deploy Android-powered devices

•OEM Partnerships

- Partner with OEM to build best-in-class Android-powered handsets with the latest and greatest Android platforms

- Work with OEMs to ensure Android compatibility

- Work with OEM to integrate Google Mobile Services into the device

•Mobile Network Operator Partnerships

- Partner with Operator to deploy best-in-class Android-powered devices

- Collaborative marketing agreement

- Android Market rev-share and *maybe* ad rev-share

- Drive flat-rate data plans

Google # Android Teams within Google **ANDROID**

Android Platform Eng
- Responsible for core open source platform
- Working directly on open-source repository
- Platform release management

Google Mobile Eng
- Responsible for Google Mobile Services (GMS) on Android

Android Deployment Eng
- Work with small set of partners on next-gen Android handset development
- BSP for strategic chipsets
- Work with partners to enable new features for specific projects

Partner Solutions
- Provide partner support for Android handset development
- Responsible for GMS distribution on Android handsets
- May work closely with Android Deployment Eng on lead devices, but may work on separate projects
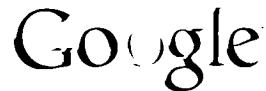
Google   **Android Teams within Google**   ANDROID

Android Platform Eng = Focused on Open Source Platform

– Provide best possible open source mobile platform

Google Mobile Eng = Focused on Google Mobile Apps

– Provide best possible Google experience on Android

Android Deployment Eng = Focused on Lead Devices

– Drive commercial viability of platform releases and drive handset innovation

Partner Solutions = Focused on Strategic Android Partners

– Drive Android adoption and compatibility through partners

Android Partnership Models

An overview of Android partnership models

Google **Android Go-to-Market** android
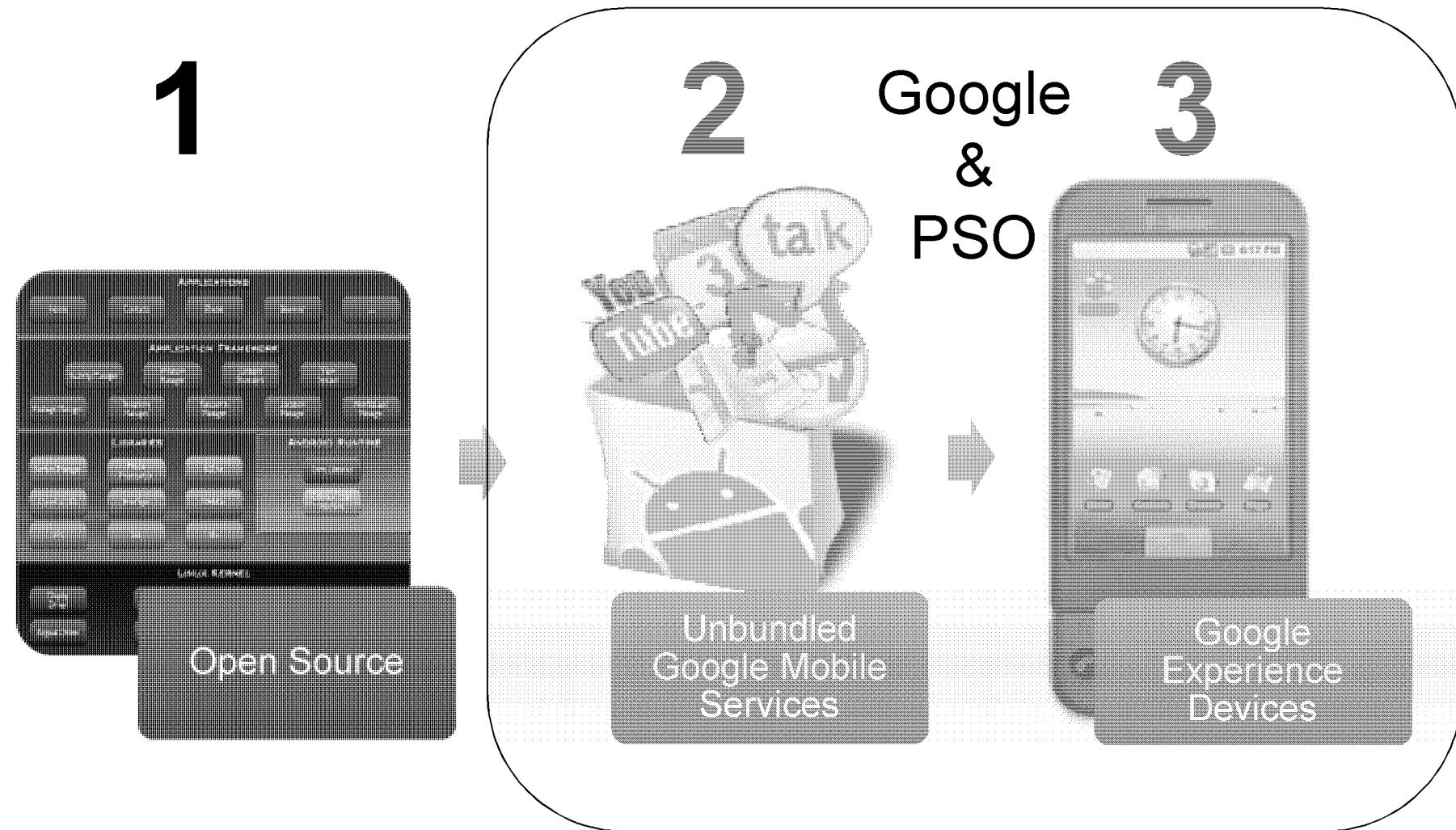
Google   **Android Partnership Types**   **android**
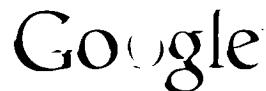
Unbundled Google Mobile Services (GMS) Deals

- Similar to standard Google Mobile Services deals for other platforms
- Google plays a supporting role to the OEM, who manages the device launch

Google (PSO) → **OEM** → **Operator**

Google (PSO)
- Provide high-level platform support and coordination for technical issues
- Provide guidance on platform integration and compatibility issues
- Enable Google Mobile Services (GMS) integration

OEM
- Customizes Android to fit their needs. May create entirely new UI / UX
- Manages operator and standards (WiFi, BT, GSM) certification
- Operator and OEM customizations

Operator
- Sell to consumers!

Google Confidential and Proprietary   39

Google   **Android Partnership Types**   android

Google Experience Device Deals

- Google manages the whole device launch and is responsible for all of the software on the device.

| OEM		Google (PSO & Deployment Eng)		Operator
• Build a device	→	• **Manage the entire device launch** from inception to operator launch • Works with chipset vendor on BSP for new silicon • Works with OEMs, ISV to validate and test new platform features (CDMA, OMA DM, etc.) • Works with OEM to design and build Android handset for Operator	→	• Sell to consumers!
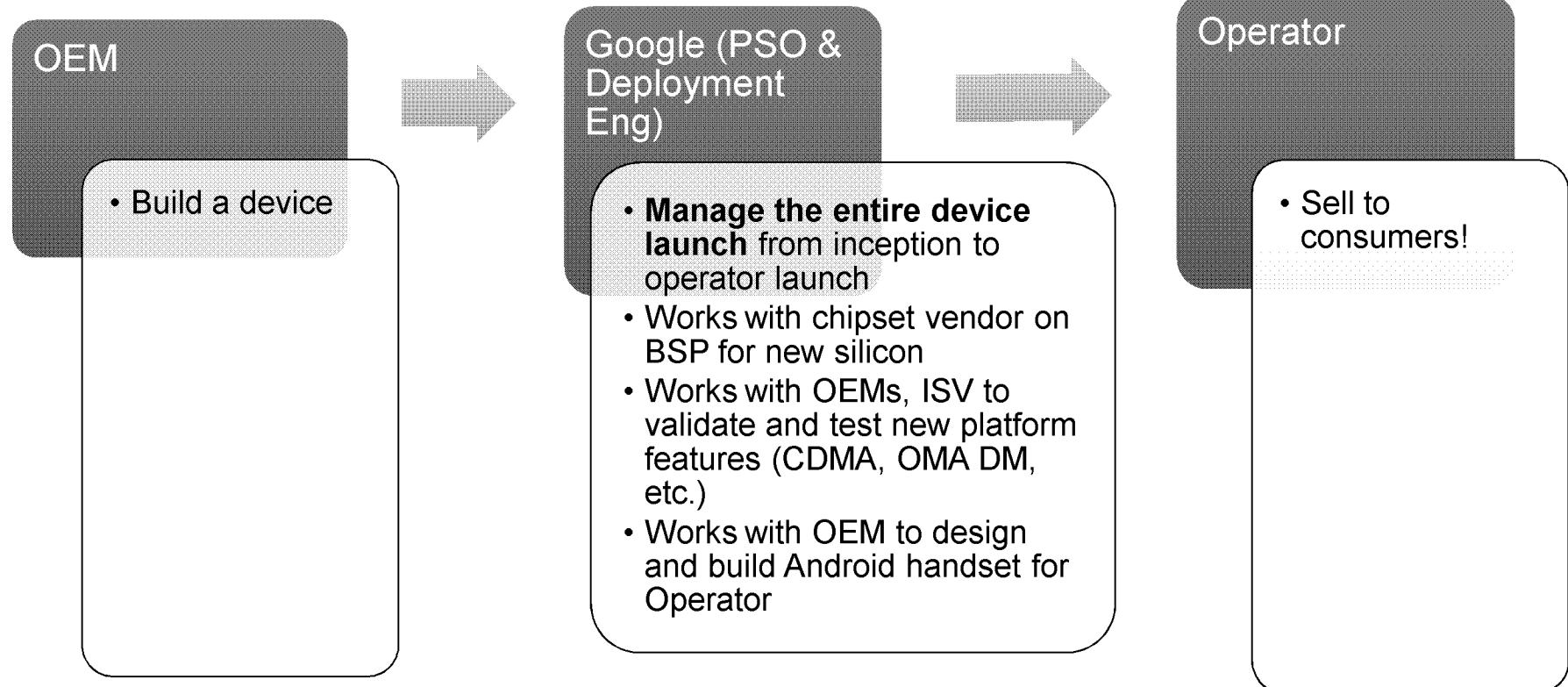
This makes sense for lead devices on new platform releases, new device profiles, or new silicon: ~2-3 per year.

Google Confidential and Proprietary   40

Google

Android OEM Launches

ANDROID

: handset launch

Google Confidential and Proprietary   41
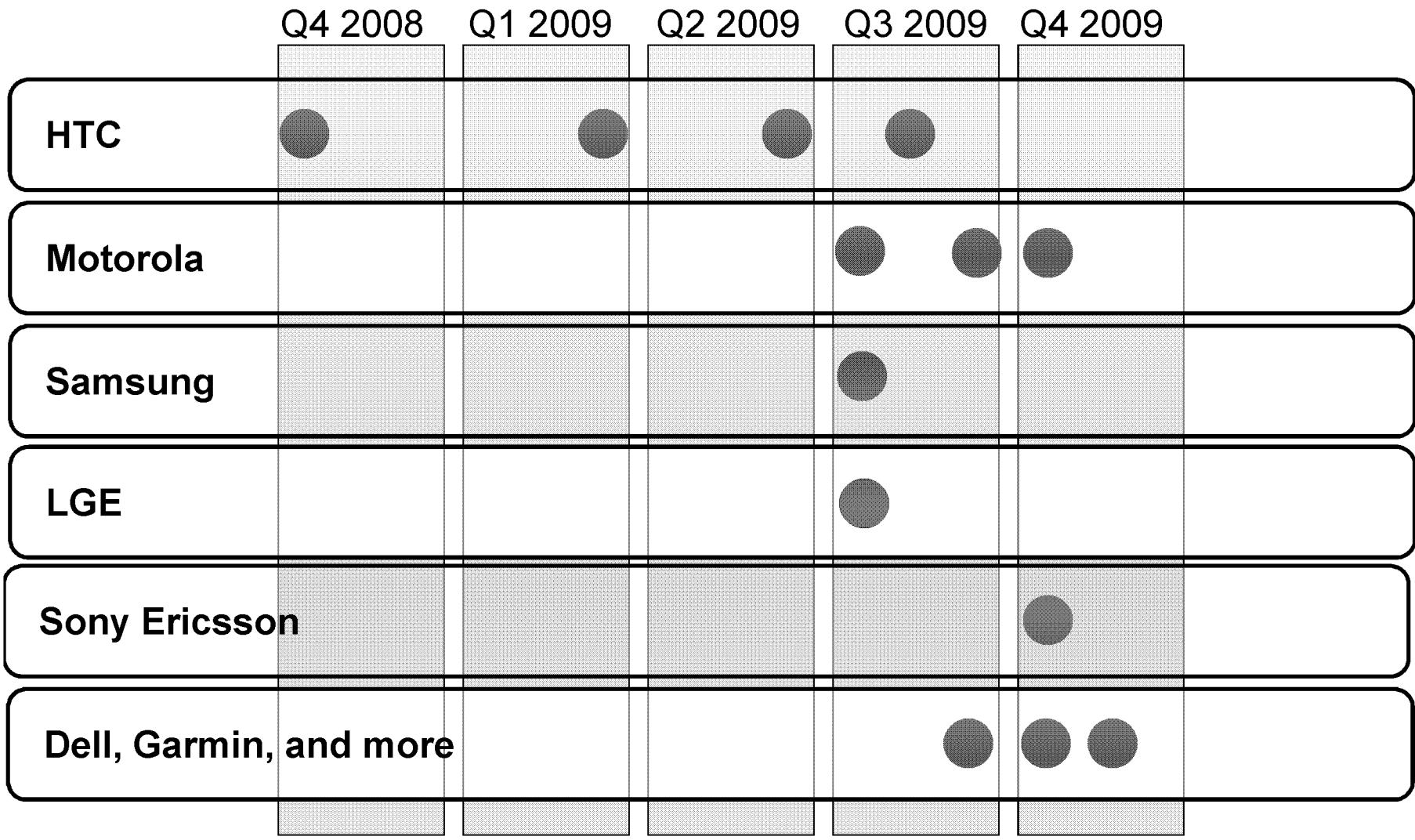
Google **Android Operator Launches** android

T-Mobile US launch with HTC
Q4 2008

T-Mobile EU launch
Q1 2009

Vodafone launch
Q2 2009

CMCC launch
Q2 2009

AT&T launch
Q3 2009

DoCoMo launch
Q3 2009

Sprint launch
Q3 2009

TIM, Telefonica,
Orange
Q1 2009

SingTel, Optus
Q1 2009

Google Confidential and Proprietary   42
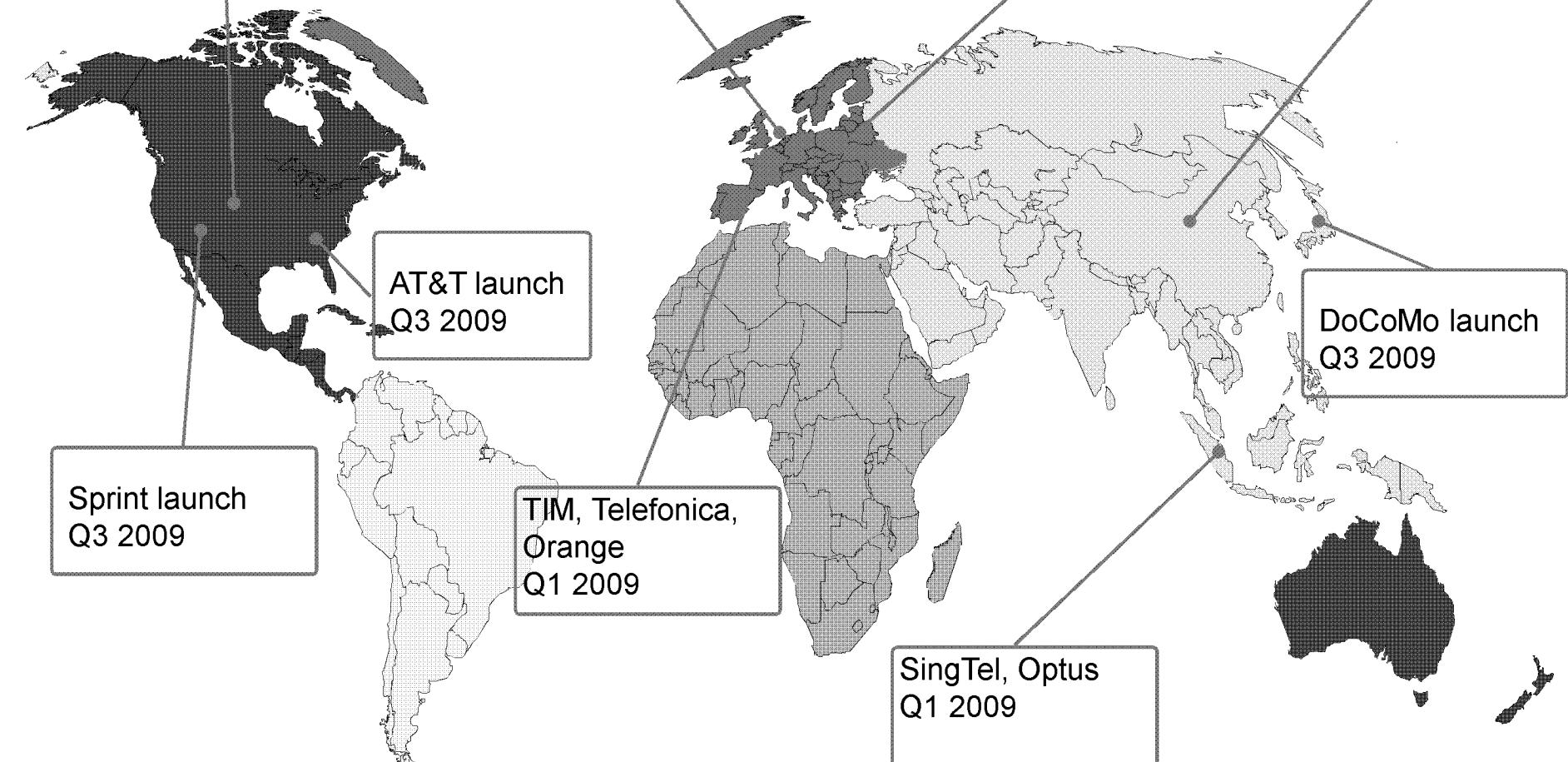
Extra slides

Google

T-Mobile G1 Launch
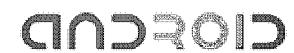
ANDROID

Devices checking in within last N days

Legend:
- 333,488 @ 60 days
- 332,853 @ 30 days
- 324,264 @ 14 days
- 290,600 @ 1 day
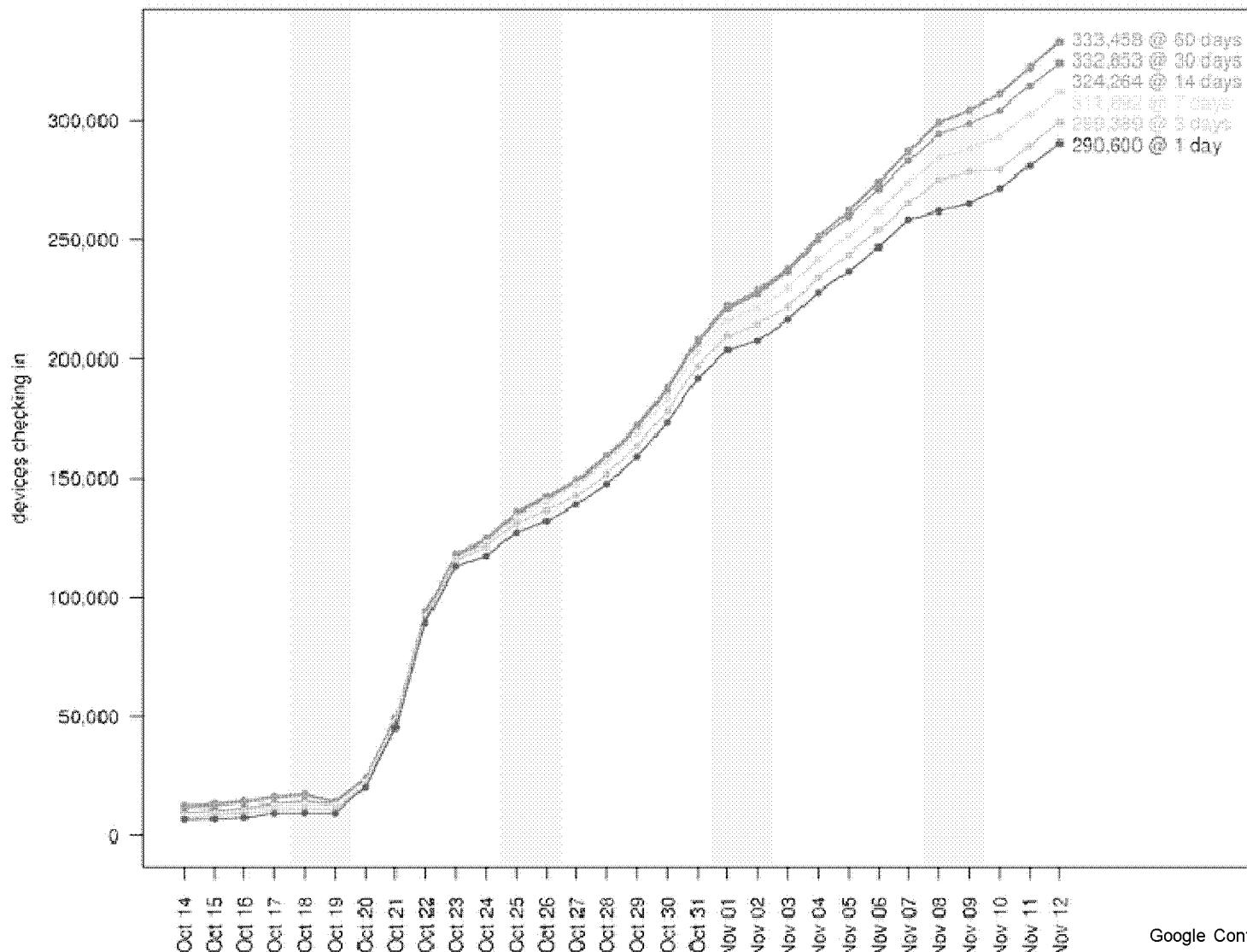
Google Confidential and Proprietary   44

Google
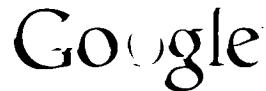
Healthy Query Growth

ANDROID

Queries

1.49 Queries Per Day / Device

Google Confidential and Proprietary   45

Trial Exhibit 31, Page 45 of 47

Google
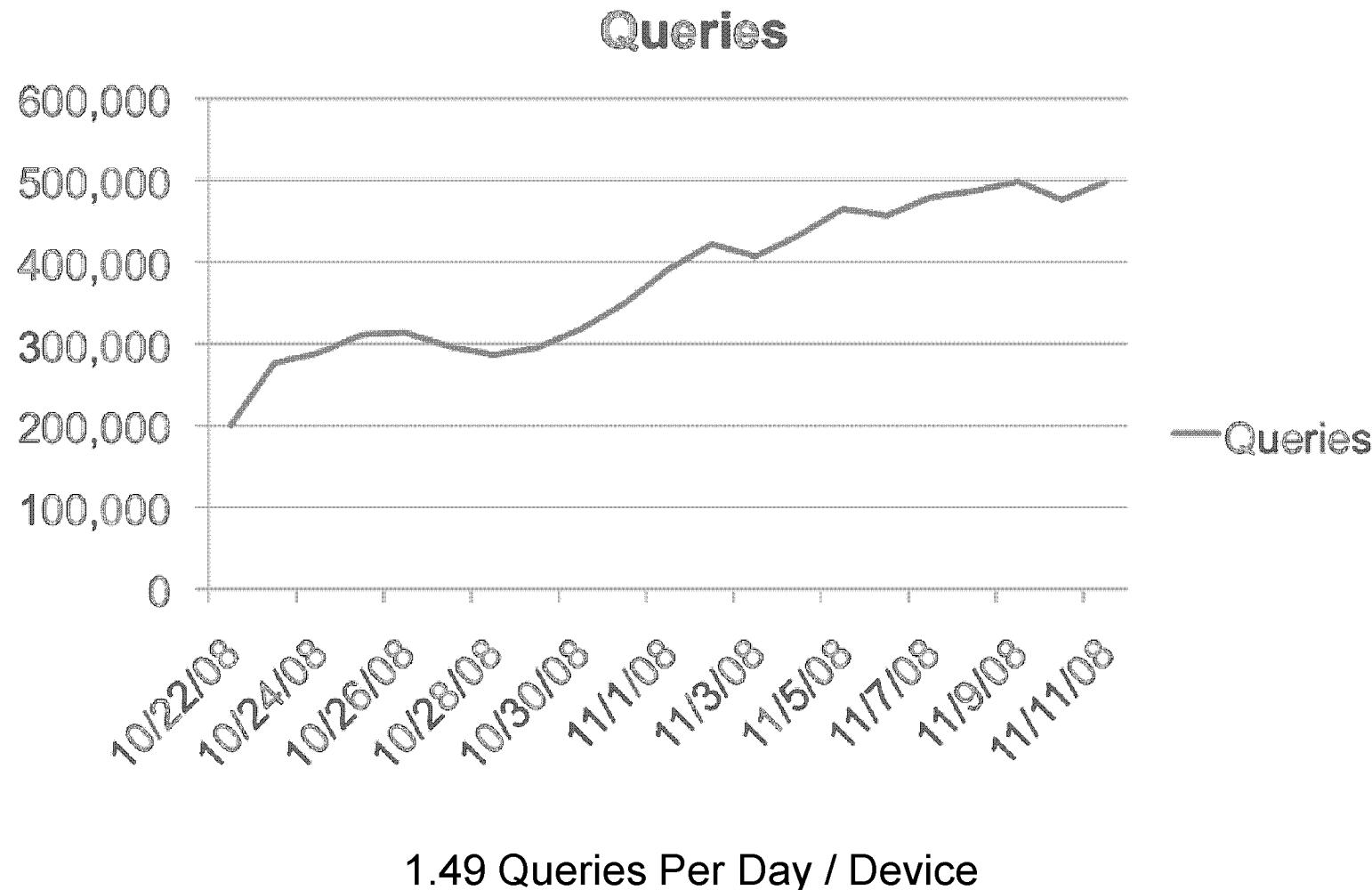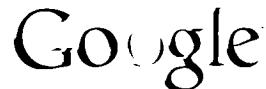
Android Device Projections

∩∩⊃ROI⊃

- 110,296 unique users to date (as of 2pm 23 Oct 2008)

- Company OKR to hit 1M devices by end of 2008

- 8-12M devices projected by end of 2009

Google Confidential and Proprietary   46
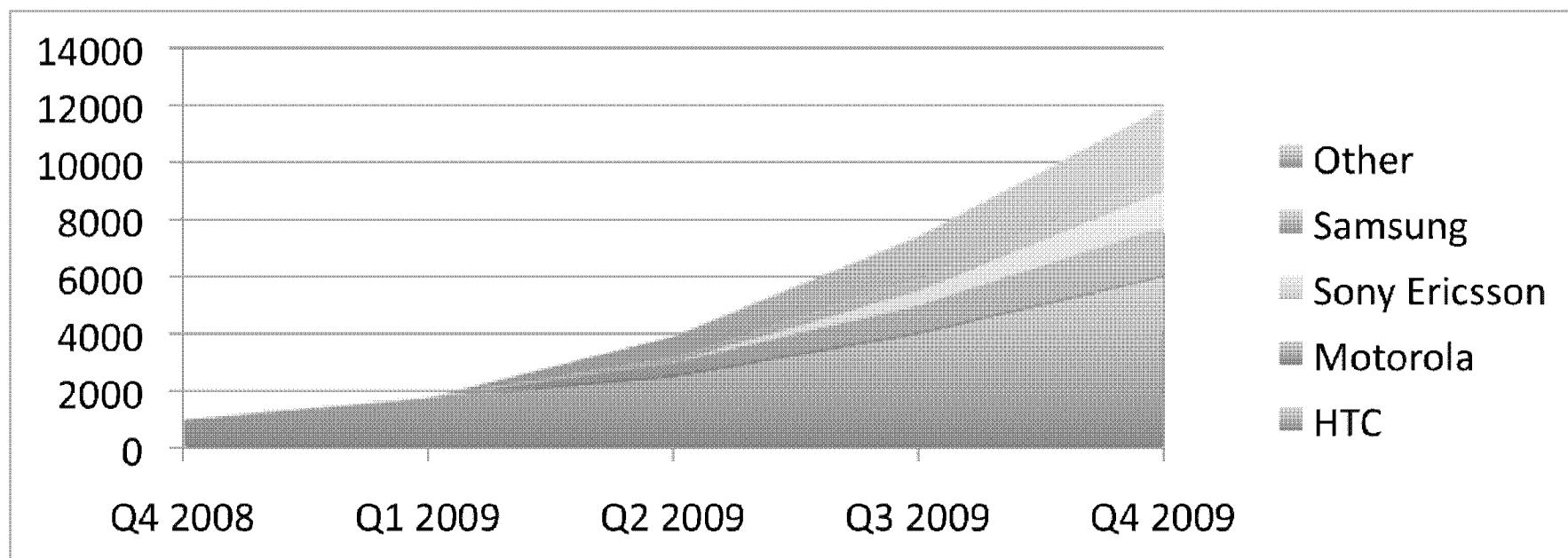
Slide Notes

Slide 20:

Provide an extremely portable platform

Full mobile handset platform as open opensource platform

Slide 22:

"scalable" user experience can be modified/improved.

Slide 45:

$0.04 per device per day vs. $0.01 for iPhone

$11k per day

$4M run rate at 340k devices

$14M run rate at 1M devices